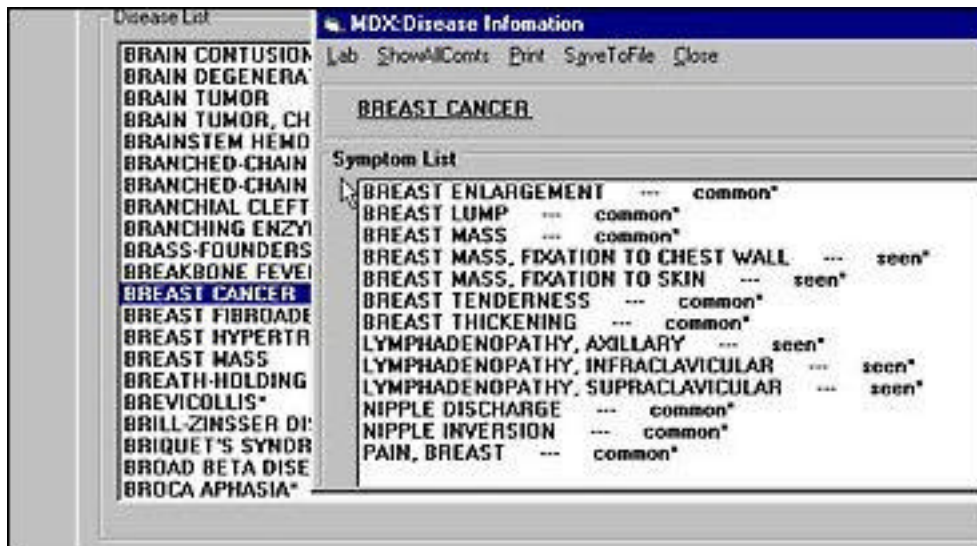# NASA Success Story

MDX - Clinical Decision Support Technology

The dream of a Florida doctor for a medical version of the HAL computer from the movie "2001, A Space Odyssey", has culminated in a successful commercial product, the MDX(c) Clinical Decision Support Technology . In 1987, Dr. Ralph Grams, MD, was a medical systems specialist at the University of Florida College of Medicine when he started working with the Kennedy Space Center Biomedical Office under a research grant to help develop a computer-based medical information and diagnostic support system. The need was to have a system to help astronauts diagnose their own illnesses during long space voyages. Now, 12 years later, Grams has formed a new company, Martek Research, Inc., of Gainesville, Florida, to market MDX and Smart Charts. Customer interest has been expressed by a large international Health Maintenance Organization (HMO) group that covers Middle Eastern countries, Africa, and South America. A product release is planned for the fall of 1999 at the American Academy of Family Physicians Conference in Orlando, Florida. Papers have been submitted for presentation and there will be a display of the system at the Fact & Comparisons booth. Martek Research has a publishing joint venture partner with Facts & Comparisons, a St. Louis company that is a leading provider of authoritative drug information to professionals and students in the health professions. Commercial markets range from HMOs and large clinical groups to the primary care physician in solo practice. Martek also sees a role for its product with existing electronic medical record (EMR) vendors who want the best decision support system (DSS) and chart creation tools in the industry. The product is contained on a single PC-based CD-ROM and includes a user guide.
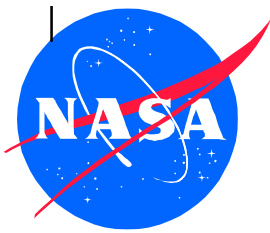
NASA Involvement Health care on the International Space Station and on long space flights can present some unique and difficult problems, and Kennedy Space Center's Biomedical Office joined with the University of Florida's College of Medicine to develop the innovation. The original project

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MDX - Clinical Decision Support Technology (Continued)

was called the Clinical Practice Library of Medicine (CPLM), with Dr. Paul Buchanan, MD, retired KSC Biomedical Office director acting as the NASA technical lead. Dr. Grams and his UF associates took on four tasks as defined in the statement of work: building a CPLM database; a multimedia medical record; decision support and Artificial Intelligence (AI) technology; and a semi-intelligent operation. The CPLM contained the latest information from 12 medical reference books, some 1,000 medical journals, and an atlas of human anatomy. The program features digital dictation and transcription, automated storage and retrieval of patients' records, information on more than 20,000 drugs and their side effects. The new product, MDX, is currently being evaluated by the KSC Biomedical Office.

Social/Economic Benefit The use of intelligent medical records or Smart Charts could potentially effect any patient who visits a doctor or goes to a hospital for treatment. The MDX program provides diagnostic support for tough clinical problems and would be used in situations where there is a doubt or clinical questions encountered in the care plan. Both of these technologies can improve physician productivity, enhance outcomes, and reduce costs by providing reliable primary care clinical decision support tools. The economic benefits occur when a doctor has legible, letter-perfect charts that teach as well as document the patient care process in the exam room. The competitive advantage of the MDX and Smart Charts rests with its databases that are totally unique and very difficult to duplicate. The size and scope of these medical files allows Martek Research to provide superior clinical data during the patient care examination and to direct and control the entire process. This is a total change in style from the blank page systems used in the past. The computer now knows more medicine than any human could memorize in a lifetime. The system has no limits to the size of this knowledge base and can grow and change with the company's professional medical updates. The system supports the simple, routine cases and is totally capable of handling the most complex problems. MDX contains the largest structured medical database in the world and is capable of constant updates. These databases are all backed by reference texts and journals so that the files are fully supported for any legal challenge. The data does not represent any small groups' personal opinions, but displays the consensus finding of large clinical peer review panels that publish their disease profiles in major referenced documents.

Industry Partner
Martek Research, Inc.

NASA Partner
Kennedy Space Center

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